

Inter-Turn Fault Detection for Air Core Reactors

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Problem Statement

Devise a method to identify
inter-turn faults of an air core reactor
using a small scale model.

Deliverables

- RTDS Model
 - Simulated results of the fault currents
- Scale 3 phase air core reactor model
 - One coil will be hand wound with test points
- Oscillography of faults on scale model
- Assist with protection scheme development and testing

Budget

	A	B
1	Expenses:	
2	Trip to Noxon	\$291.27
3	Purchase of Test Coils	\$195.14
4	Bulk Purchase of Coils	\$1,222.83
5	Purchase of Bulk Wire	\$245.23
6	Purchase of Coil Stand Material	\$81.32
7	Total Expenses:	\$2,035.79
8		
9		
10		
11	Total Budget:	\$4,800
12		
13		
14	Current Balance	\$2,764

RTDS Simulation

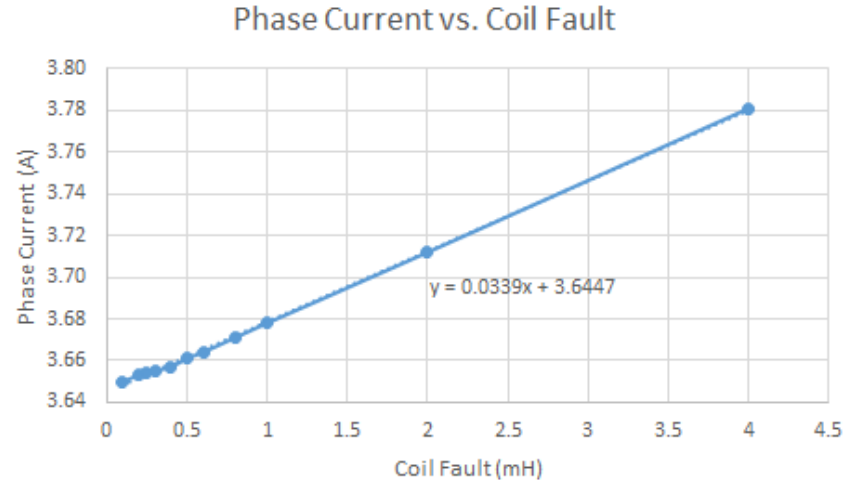
RMS Phase Voltage: 120 V

Series Resistance: 20 Ohms

Series Inductance: 70 mH

Frequency: 60 Hz

Steady State RMS Current: 3.65 A



Complete Tasks

- Relay Simulation rack is wired
 - Ready to attach inductor coils
- Inductor test fixture built
- Prototype hand wound coils constructed
 - Determined best method (Lathe)
- Updated RTDS

Schedule

- Finish winding coils
 - February 21st
- Assemble prototype to relay simulation rack
 - March 1st
- Troubleshoot prototype setup
 - March 1st - March 8th
- Capture fault data on test circuit and compare to RTDS model
 - March 8th - March 31st
- Test Avista existing protection and additional protection schemes and methods
 - March 20th - April 21st
- Expo
 - April 28th